

CONTENTS OF VOLUME 16

Nos. 1 and 2

PAGE

M. A. WEISS and C. H. WORSHAM: Nozzle sprays in air streams	1
G. NARSIMHAN: Thermal decomposition of calcium carbonate	7
J. G. VAN DE VUSSE: Mass transfer with chemical reaction	21
J. O. MINGLE and J. M. SMITH: Pore size distribution functions for porous catalysts ..	31
P. H. CALDERBANK and M. B. MOO-YOUNG: The continuous phase heat and mass-transfer properties of dispersions	39
J. T. DAVIES and G. R. A. MAYERS: The effect of interfacial films on mass transfer rates in liquid-liquid extraction	55
G. R. A. MAYERS: The correlation of individual film coefficients of mass transfer in a stirred cell	69
E. McLAUGHLIN: Relationships between the transport coefficients of fluids	76
C. O. HAUGHTON: Liquid-vapour equilibria and azeotropic data for acetic acid and toluene	82
R. A. GAGGIOLI: The concept of available energy	87
R. M. DEBAUN and S. KATZ: Approximations to residence time distributions in mixing systems and some applications thereof	97
L. MASSIMILLA and H. F. JOHNSTONE: Reaction kinetics in fluidized beds	105
R. M. NEDDERMAN: The use of stereoscopic photography for the measurement of velocities in liquids	113
R. M. NEDDERMAN: The measurement of velocities in the wall region of turbulent liquid pipe flow	120
Shorter Communication:	
A. ORELL and J. W. WESTWATER: Natural convection cells accompanying liquid-liquid extraction ..	127
Letters to the Editors:	
J. W. SMITH: Heat transfer coefficients at the entry to the heating section	128
K. B. BISCHOFF: A note on boundary conditions for flow reactors	131
A. KLINKENBERG and A. HARMENS: Unsteady state transfer in stationery packed beds	133
Book Reviews:	
C. R. BUXTON and H. S. JACKSON: Translation from Russian for Scientists (reviewed by P. S. SQUIRE)	135
J. C. COLLINS, Editor: Radioactive Wastes - Their Treatment and Disposal (reviewed by G. R. HALL)	135
S. H. BRANSON: Applied Thermodynamics (reviewed by H. P. HUTCHINSON)	136
G. HARGREAVES: Elementary Chemical Thermodynamics (reviewed by H. P. HUTCHINSON) ..	136
G. TINE: Gas sampling and chemical analysis in combustion processes (reviewed by M. J. G. WILSON)	136
Proceedings for the Fourth Conference on Carbon, University of Buffalo 1959 (reviewed by F. ROBERTS)	137
Selection of current papers of interest to Chemical Engineers	139
Selection of current Soviet papers of interest to Chemical Engineers	141

J. A. McDONOUGH, C. D. HOLLAND and H. L. BAUNI: Determination of the conditions at minimum reflux when the keyes are the most and least volatile components	143
H. C. SIMPSON and B. W. RODGER: The fluidization of light solids by gases under pressure and heavy solids by water	153
C. J. PINGS: Thermodynamics of chemical equilibrium - I. Effect of temperature and pressure	181
G. F. FROMENT and K. B. BISCHOFF: Non-steady state behaviour of fixed bed catalytic reactors due to catalyst fouling	189
G. ASTARITA: Carbon dioxide absorption in aqueous monoethanolamine solutions	202
C. J. HOOGENDOORN and A. A. BUITELAAR: The effect of gas density and gradual vaporization on gas-liquid flow in horizontal pipes	208
G. H. ANDERSON, G. G. HASELDEN and B. G. MANTZOURANIS: Two-phase (gas-liquid flow) phenomena - III. The calculation of heat transfer in a vertical long-tube evaporator	222
J. C. SLATTERY and R. B. BIRD: Non-newtonian flow past a sphere	231
H. BRENNER: The slow motion of a sphere through a viscous fluid towards a plane surface	242
R. KOEPCKE and L. LAPIDUS: Dynamic control of chemical engineering processes using a method of Lyapunov	252
D. KRISTMANSON and P. V. DANCKWERTS: Studies in turbulent mixing - I. Dilution of a jet	267
R. F. DYE: Unsteady-state one dimensional countercurrent diffusion of gases	278
D. D. PERLMUTTER: Surface-renewal models in mass transfer	287
C. V. STERNLING and L. J. TICHACEK: Heat transfer coefficients for boiling mixtures. Experimental data for binary mixtures of large relative volatility	297
W. H. SCHWARZ and B. CASWELL: Some heat transfer characteristics of the two-dimensional laminar incompressible wall jet	338
D. J. WILDE: The operating behaviour of multi-stage systems - I. The steady state	352
SAKAE YAGI and DAIZO KUNII: Fluidized-solids reactors with continuous solids feed - I. Residence time of particles in fluidized beds	364
SAKAE YAGI and DAIZO KUNII: Fluidized-solids reactors with continuous solids feed - II. Conversion for overflow and carryover particles	372
SAKAE YAGI and DAIZO KUNII: Fluidized-solids reactors with continuous solids feed - III. Conversion in experimental fluidized-solids reactors	380
Selection of current papers of interest to Chemical Engineers	392
Selection of current Soviet papers of interest to Chemical Engineers	395

Author Index

(B.R.) denotes book review

(L) denotes Letter to the Editors

ANDERSON, G. H. p. 222	HOOGENDOORN, C. J. p. 208	PINGS, C. J. p. 181
ASTARITA, G. p. 202	HUTCHINSON, H. P. (B.R.) p. 136	ROBERTS, F. (B.R.) p. 137
BAUNI, H. L. p. 143	JOHNSTONE, H. F. p. 105	RODGER, B. W. p. 153
BIRD, R. B. p. 231	KATZ, S. p. 97	SCHWARZ, W. H. p. 338
BISCHOFF, K. B. (L) pp. 131, 189	KLINKENBERG, A. (L) p. 133	SIMPSON, H. C. p. 153
BRENNER, H. p. 242	KOEPCKE, R. p. 252	SLATTERY, J. C. p. 231
BUITELAAR, A. A. p. 208	KRISTMANSON, D. p. 267	SMITH, J. M. p. 31
CALDERBANK, P. H. p. 39	KUND, D. pp. 364, 372, 380	SMITH, J. W. (L) p. 128
CASWELL, B. p. 338	LAPIDUS, L. p. 252	SQUIRE, P. S. (B.R.) p. 135
DANCKWERTS, P. V. p. 267	MANTZOURANIS, B. G. p. 222	STERNLING, C. V. p. 29
DAVIES, J. T. p. 55	MASSIMILLA, L. p. 105	TICHACEK, L. J. p. 297
DEBAUN, R. M. p. 97	MAYERS, G. R. A. pp. 55, 69	VAN DE VUSSE, J. G. p. 21
DYE, R. F. p. 278	MCDONOUGH, J. A. p. 143	WEISS, M. A. p. 1
FROMENT, G. F. p. 189	MCLAUGHLIN, E. p. 76	WESTWATER, J. W. p. 127
GAGGIOLI, R. A. p. 87	MINGLE, J. O. p. 31	WILDE, D. J. p. 352
HALL, G. R. (B.R.) p. 135	MOO-YOUNG, M. B. p. 39	WILSON, M. J. G. p. 136
HARMENS, A. (L) p. 133	NARSIHMAN, G. p. 7	WORSHAM, C. H. p. 1
HASELDEN, G. G. p. 222	NEDDERMAN, R. M. pp. 133, 120	YAGI, S. pp. 364, 372, 380
HAUGHTON, C. O. p. 82	O'RELL, A. p. 127	
HOLLAND, C. D. p. 143	PERLMUTTER, D. D. p. 287	

VOL.
16
962